

# **Abstract**

A heat engine includes a plurality of heating side expansion chambers and cooling side expansion chambers, positioned on opposite sides of an axis, for providing rotation of an apparatus about its axis when the fluids inside the chambers expand and contract on the same side and plane of a rotational axis. This is accomplished by, shifting the weight of fluids off-balance, or a weight, when the fluid, expands and exerts a pressure on an elastic wall inside an expansion chamber and contracts and reduces pressure on an elastic wall inside an expansion chamber, or by moving an element or ring, through actuators, when fluids expand and contract in the expansion chambers. The engine further includes a heat source and a structure for supporting the expansion chambers and heat source, and providing direction of a desired motion.

A method of operating a heat engine includes engaging a heat source, and heating and cooling a plurality of expansion chambers for expanding or contracting a fluid that shifts the weight of pistons to an off-balance position providing a rotational motion of the apparatus. Also, the heat engine structure is operated to provide reciprocating, rotating or linear direction from the rotational motion of the apparatus.